

Listing of Claims:

1. (currently amended) A circuit for connecting to a power supply having power supply noise, the circuit for amplifying an input signal from a photodetector comprising:
 - a transimpedance amplifier (TIA) circuit for operating in a differential manner and having a gain and a first input port for receiving the input signal from the photodetector, a second input port and an output port, the TIA circuit for providing a TIA circuit output signal comprising a voltage ripple signal dependent on the power supply noise and an amplified signal dependent on the input signal and the gain of the TIA circuit;
 - a first biasing circuit coupled to the second input port for providing a first bias signal thereto, the first bias signal including the voltage ripple signal dependent on the power supply noise; and,
 - a filter circuit coupled to the output port of the TIA circuit for filtering the TIA circuit output signal to form a filtered signal, the filter circuit for filtering the TIA circuit output signal in dependence upon ~~a time-varying component~~ the AC portion of the first bias signal and for providing the filtered signal to a filter output port thereof.
2. (original) A circuit according to claim 1 wherein the filter circuit comprises a high pass filter circuit for attenuating low frequency components of the voltage ripple signal provided to the filter output port.
3. (original) A circuit according to claim 1 wherein the filter circuit comprises a low pass filter for attenuating high frequency components of the TIA circuit output signal provided to the filter output port.
4. (original) A circuit according to claim 1 comprising a differential amplifier having a positive input port for receiving the TIA circuit output signal and having a negative input port for receiving the filtered signal, the differential amplifier having a two output ports for providing a differential output signal therefrom, the differential output signal representative of an amplified difference between the TIA circuit output signal and

filtered signal, and an attenuated other than difference between the TIA circuit output signal and filtered signals.

5. (original) A circuit according to claim 4 comprising a unity gain buffer disposed between the negative input port of the differential amplifier and the filter output port for reducing a DC voltage level offsets for input signals received between the two input ports of the differential amplifier.

6. (original) A circuit according to claim 4 wherein the first biasing circuit other than comprises a dummy TIA circuit for DC biasing of one of the negative input port and the positive input port of the differential amplifier.

7. (original) A circuit according to claim 1 wherein the biasing circuit comprises: a first current source for providing a portion of a first current to the second input port of the TIA circuit and another portion of the first current to the filter circuit.

8. (original) A circuit according to claim 7 wherein the biasing circuit comprises: a first resistor disposed between a first voltage input port for receiving a positive voltage and the positive input port of the TIA circuit.

9. (original) A circuit according to claim 8 wherein the biasing circuit comprises: a first capacitor disposed in parallel with the first current source, the first capacitor for reducing the thermal noise contributions of the first resistor.

10. (original) A circuit according to claim 7 wherein the biasing circuit comprises: circuitry generating a bias signal including the voltage ripple signal dependent on the power supply noise wherein the circuitry is other than a resistor potential divider circuit.

11. (original) A circuit according to claim 1 wherein the TIA circuit comprises circuitry for operating as a unity gain voltage amplifier.

12. (original) A circuit according to claim 1 wherein the TIA circuit comprises electrical circuitry for providing a high differential gain and a high common mode rejection when amplifying the TIA circuit input signals to provide the TIA circuit output signal.

13. (original) A method of performing power supply noise rejection for providing an output signal comprising the steps of:

providing a TIA circuit having two input ports;

providing an input signal for amplification to a negative input port of the TIA circuit;

providing a first bias signal having a voltage ripple to a positive input port of the TIA circuit;

amplifying the input signal to form a portion of an amplified signal, the amplified signal comprising a noise signal representative of power supply noise and an amplified version of the input signal;

filtering the amplified signal to form a filtered signal comprised of power supply noise;

differentially amplifying the filtered signal and the amplified signal to provide an output signal from the TIA circuit having an amplified version of the input signal and an attenuated version of the power supply noise.

14. (original) A method according to claim 13 wherein a magnitude of the voltage ripple provided in the amplified signal is of an approximately same magnitude as the voltage ripple provided at the output port of the filter circuit.

15. (original) A method according to claim 13 wherein the TIA circuit amplifies the input signal and first bias signal in a differential manner.

16. (original) A method according to claim 13 wherein the negative input port of the TIA circuit is a low impedance input port.

17. (original) A method according to claim 13 wherein the positive input port of the TIA circuit is a high impedance input port for providing DC bias to the positive input port.

18. (currently amended) A single ended to dual conversion circuit comprising:

a transimpedance amplifier (TIA) circuit for operating in a differential manner and having a gain and a first input port for receiving an input signal from the photodetector, a second input port and an output port, the TIA circuit for providing a TIA circuit output signal comprising a voltage ripple signal dependent on a power supply noise and an amplified signal dependent on the input signal and the gain of the TIA circuit;

a first biasing circuit coupled to the second input port for providing a first bias signal thereto, the first bias signal comprising the voltage ripple signal dependent on the power supply noise;

a filter circuit coupled to the output port of the TIA circuit for filtering the TIA circuit output signal to form a filtered signal, the filter circuit for filtering the TIA circuit output signal in dependence upon ~~a time-varying component~~ the AC portion of the first bias signal and for providing the filtered signal to a filter output port thereof; and
a differential amplifier having a positive input port for receiving the TIA circuit output signal and having a negative input port for receiving the filtered signal, the differential amplifier having a two output ports for providing a differential output signal therefrom, the differential output signal representative of an amplified difference between the TIA circuit output signal and filtered signal, and an attenuated other than difference between the TIA circuit output signal and filtered signal.